Invited Talk

KEMAI Research Training Group GRK 3012/1

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Katharina Breininger - Pattern Recognition Lab, Julius-Maximilians-Universität Würzburg

Title: Crossing the Gap? Investigating Foundation Models in Computational Pathology

Abstract. Foundation models have become an important ingredient in medical image analysis, especially in computational pathology. They hold the promise of reducing the need for annotated training data, increasing robustness, and broadening applicability. Still, their real-world value depends on robust adaptation across scanners, clinical sites, and application domains. This talk will examine recent research on domain shifts, benchmarks, and data-efficient model adaptation in medical imaging, with a focus on histopathology. It will explore typical adaptation strategies such as linear probing, end-to-end training, self-supervised approaches, and parameter-efficient methods, showing that foundation models are powerful starting points but are not automatically superior without careful adaptation. Particular focus will be placed on their potential in limited-label settings, while highlighting open challenges in generalization, validation, and domain-aware evaluation.

Speaker Bio. Katharina Breininger is Professor of Pattern Recognition at the Center for Artificial Intelligence and Data Science (CAIDAS) and the Institute of Computer Science at Julius-Maximilians-Universität Würzburg. Her research focuses on robust and generalizable machine learning for interdisciplinary applications, with a particular emphasis on medicine and medical imaging. Her group investigates representation learning, generalization under domain shifts, annotation and labeling strategies, human factors, and human-AI collaboration, while also developing open-source tools and datasets for semi-automatic and collaborative annotation. Application areas include intraoperative and multimodal imaging, interventional imaging, microscopy, and digital pathology. She studied computer science in Marburg and Erlangen and completed her PhD in 2020 at FAU Erlangen-Nürnberg on image fusion for minimally invasive interventions in collaboration with Siemens Healthineers. Before joining Würzburg in 2024, she was W1 Professor of Artificial Intelligence in Medical Imaging at FAU, where she led the AI in Medical Imaging lab.

Place & Time.

Schloss Reisensburg, Roter Saal
Wednesday, July 15, 2026
11:20 – 12:20

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